

**IN THE CLAIMS:**

This list of claims will replace all prior versions, and listings of claims in the application.

Please amend claims 1-20 as follows:

1. (Currently Amended) A ~~[[multiplexer]]~~ multiplexing apparatus which multiplexes a plurality of elementary data streams to generate one multiplexed stream, the multiplexing apparatus comprising:

a memory which stores a ~~[[supplied]]~~ plurality of data units that are composed of an arbitrary amount of said elementary data streams;

an instruction generating means for generating a plurality of multiplexing instruction data ~~[[having stated therein]]~~ which describes a storage location ~~[[, in the memory,]]~~ of ~~[[a]]~~ each data unit ~~composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and~~ storing the ~~[[generated]]~~ multiplexing instruction data into the memory in an order ~~[[of multiplexing corresponding]]~~ that said plurality of data units are to be multiplexed; and

a multiplexed stream generating means for generating one multiplexed stream by reading the multiplexing instruction data sequentially ~~[[one by one]]~~ from the memory, ~~reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and~~ ~~[[by]]~~ outputting the ~~[[read]]~~ data ~~[[units]]~~ unit corresponding to the multiplexing instruction data.

2. (Currently Amended) A ~~[[multiplexer]]~~ multiplexing apparatus which multiplexes

a plurality of elementary data streams to generate one multiplexed stream, the multiplexing apparatus comprising:

a memory which stores a ~~[[supplied]]~~ plurality of data units that are composed of an arbitrary amount of said elementary data streams;

an instruction generating means for generating a plurality of multiplexing instruction data ~~[[having stated therein]]~~ which describe a storage location~~[[, in the memory,]]~~ of ~~[[a]]~~ each data unit ~~composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit~~ while generating command instruction data having stated therein an instruction for execution of a data processing to be executed in an arbitrary position in the multiplexing instruction data, and storing the ~~[[generated]]~~ multiplexing instruction data and command instruction data into the memory in an order ~~[[of multiplexing]]~~ that the plurality of data units and execution instruction are to be multiplexed;

a multiplexed stream generating means for generating one multiplexed stream including the elementary data streams and command data by reading the multiplexing instruction data and command instruction data sequentially ~~[[one by one]]~~ from the memory, ~~reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and~~ outputting the ~~[[read]]~~ data~~[[ units]]~~ unit corresponding to the multiplexing instruction data, ~~[[when having read]]~~ after reading the multiplexing instruction data, or by outputting command data having stated therein the execution instruction stated in the command instruction data, ~~[[when having read]]~~ after reading the command instruction data; and

a command executing means which is supplied with a multiplexed stream output from the multiplexed stream generating means and makes a processing corresponding to an instruction content stated in the command data when ~~[[the]]~~ a data row in the ~~[[input]]~~ multiplexed stream is

command data, or outputs the [[input]] multiplexed stream as it is when the data row in the input multiplexed stream is elementary data stream.

3. (Currently Amended) The apparatus as set forth in claim 2, wherein:

the multiplexed stream generating means outputs, synchronously with the multiplexed stream, an ID flag for identifying which [[the]] data row in the multiplexed stream is[[,]] command data or elementary data stream; and

the command executing means judges based on the ID flag [[which]] whether the data row in the [[supplied]] multiplexed stream is[[,]] command data or elementary data stream.

4. (Currently Amended) The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when inserting stuffing data into an output multiplexed stream, command instruction data having stated therein an instruction for inserting the stuffing data and an amount of the stuffing data;

the multiplexed stream generating means outputs, when the [[read]] command instruction data has stated therein an instruction for inserting the stuffing data, the command data having stated therein the content stated in the command instruction data; and

the command executing means inserts, when the command data has stated therein an instruction for inserting the stuffing data, stuffing data whose amount is stated in the command data to a position of the command data in the multiplexed stream.

5. (Currently Amended) The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when deleting data from an output multiplexed stream, command instruction data having stated therein a data delete instruction and data amount to be deleted;

the multiplexed stream generating means outputs, when the [[read]] command instruction data has stated therein an instruction for deletion of data, the command data having stated therein the content stated in the command instruction data; and

the command executing means deletes, when the command data has stated therein an instruction for deletion of the data, an amount of data stated in the command data from a multiplexed stream next to the command data.

6. (Currently Amended) The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when inserting arbitrary data into an output multiplexed stream, command instruction data having stated therein an instruction for insertion of the arbitrary data;

the multiplexed stream generating means outputs, when the [[read]] command instruction data has stated therein an instruction for insertion of the arbitrary data, the command data having stated therein the content stated in the command instruction data; and

the command executing means inserts, when the command data has stated therein an instruction for insertion of the arbitrary data, the arbitrary data stated in the command data to a position of the command data in the multiplexed stream.

7. (Currently Amended) The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when sending a timing acknowledgment in an arbitrary timing in an output multiplexed stream, command instruction data having stated therein an instruction for sending a timing acknowledgment;

the multiplexed stream generating means outputs, when the [[read]] command instruction data has stated therein an instruction for sending the timing acknowledgment, the command data having stated therein the content stated in the command instruction data; and

the command executing means sends, when the command data has stated therein an instruction for sending the timing acknowledgment, the timing acknowledgment in a position of the command data in the multiplexed stream.

8. (Currently Amended) A [[multiplexer]] multiplexing apparatus which multiplexes a plurality of elementary data streams to generate one multiplexed stream, the multiplexing apparatus comprising:

a memory which stores a [[supplied]] plurality of data units that are composed of an arbitrary amount of said elementary data streams;

a counting means for indicating a count which indicates a data occupancy of the memory;

an instruction generating means for generating a plurality of multiplexing instruction data [[having stated therein]] which describe a storage location[[, in the memory,]] of [[a]] each data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the [[generated]] multiplexing instruction data into the memory in an order [[of multiplexing corresponding]] that said plurality of data units are to be multiplexed; and

a multiplexed stream generating means for generating one multiplexed stream by reading the multiplexing instruction data sequentially ~~[[one by one]]~~ from the memory, ~~reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and~~ ~~[[by]]~~ outputting the ~~[[read]]~~ data ~~[[units]]~~ unit corresponding to the multiplexing instruction data;

the instruction generating means adding ~~[[the]]~~ a data amount of a data unit corresponding to the ~~[[generated]]~~ multiplexing instruction data to the count; and  
the counting means subtracting the data amount of output data unit from the count.

9. (Currently Amended) The apparatus as set forth in claim 8, wherein:

the memory is divided ~~[[in]]~~ into a plurality of storage areas correspondingly to the types of the elementary data streams and the ~~[[supplied]]~~ elementary data streams is stored into corresponding storage areas;

the counting means holds a plurality of counts corresponding to the storage areas in the memory;

the instruction generating means adds the data amount of a data unit corresponding to the ~~[[generated]]~~ multiplexing instruction data to a count corresponding to a storage area in which the data unit is stored; and

the counting means subtracts the data amount of data unit output from the memory from a count corresponding to the storage area in which the data unit is stored.

10. (Currently Amended) A ~~[[multiplexer]]~~ multiplexing apparatus which multiplexes

a plurality of elementary data streams to generate a plurality of multiplexed streams, the multiplexing apparatus comprising:

a memory which stores a ~~[[supplied]]~~ plurality of data units that are composed of arbitrary amounts of said elementary data streams;

an instruction generating means for generating a plurality of multiplexing instruction data ~~[[having stated therein]]~~ which describe a storage location~~[[, in the memory,]]~~ of ~~[[a]]~~ each data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the ~~[[generated]]~~ multiplexing instruction data into the memory in an order ~~[[of multiplexing corresponding]]~~ that said plurality of data units are to be multiplexed; and

a multiplexed stream generating means for generating a plurality of multiplexed streams by reading the multiplexing instruction data sequentially ~~[[one by one]]~~ from the memory, ~~reading the data units sequentially from the storage locations stated in the read multiplexing instruction data~~ and ~~[[by]]~~ outputting the ~~[[read]]~~ data~~[[ units]]~~ unit corresponding to the multiplexed instruction data;

the instruction generating means stating, in the multiplexing instruction data, the type of a multiplexed stream resulted from multiplexing data units corresponding to the generated multiplexing instruction data; and

the multiplexed stream generating means generating the plurality of multiplexed streams by switching the outputting of the ~~[[read]]~~ data unit read correspondingly to the multiplexed stream type stated in the ~~[[read]]~~ multiplexing instruction data.

11. (Currently Amended) A multiplexing method in which a plurality of elementary

data streams ~~[[is]]~~ are multiplexed to generate one multiplexed stream, the multiplexing method comprising the steps of:

supplying a plurality of elementary data streams, dividing said elementary data streams into a plurality of data units that are composed of an arbitrary amount of said elementary data stream and storing ~~[[the supplied elementary]]~~ said data ~~[[streams]]~~ units into a memory;

generating multiplexing instruction data ~~[[having stated therein]]~~ which describe a storage location~~[[, in the memory,]]~~ of ~~[[a]]~~ each said data unit ~~composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and~~ storing the ~~[[generated]]~~ multiplexing instruction data into the memory in an order ~~[[of multiplexing corresponding]]~~ that said plurality of data units are to be multiplexed; and

~~[[generating means for]]~~ generating ~~[[one]]~~ a multiplexed stream by reading the multiplexing instruction data sequentially ~~[[one by one]]~~ from the memory ~~, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and~~ ~~[[by]]~~ outputting the ~~[[read]]~~ data ~~[[units]]~~ unit corresponding to the multiplexing instruction data.

12. (Currently Amended) A multiplexing method in which a plurality of elementary data streams ~~[[is]]~~ are multiplexed to generate one multiplexed stream, the multiplexing method comprising the steps of:

supplying a plurality of elementary data streams, dividing the elementary data streams into a plurality of data units that are composed of an arbitrary amount of the elementary data stream and storing ~~[[the supplied elementary]]~~ said data ~~[[streams]]~~ units into a memory;



generating multiplexing instruction data ~~[[having stated therein]]~~ which describe a storage location~~[[, in the memory,]]~~ of ~~[[a]]~~ each said data unit ~~composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit while~~ generating command instruction data having stated therein an instruction for execution of a data processing to be executed in an arbitrary position in the multiplexing instruction data, and storing the ~~[[generated]]~~ multiplexing instruction data and command instruction data into the memory in an order ~~[[of multiplexing]]~~ that said data units and execution instruction are to be multiplexed;

generating ~~[[one]]~~ a multiplexed stream including the elementary data streams and command data by reading the multiplexing instruction data and command instruction data sequentially ~~[[one by one]]~~ from the memory, ~~reading the data units sequentially from the storage locations stated in the read multiplexing instruction data~~ and outputting the ~~[[read]]~~ data ~~[[units]]~~ unit corresponding to the multiplexing instruction data, ~~[[when having read]]~~ after reading the multiplexing instruction data, or by outputting command data having stated therein the execution instruction stated in the command instruction data, ~~[[when having read]]~~ after reading the command instruction data; and

being supplied with a multiplexed stream output from the multiplexed stream generating means and making a processing corresponding to an instruction content stated in the command data when ~~[[the]]~~ a data row in the ~~[[input]]~~ multiplexed stream is command data, or outputting the ~~[[input]]~~ multiplexed stream as it is when the data row in the ~~[[input]]~~ multiplexed stream is elementary data stream.

13. (Currently Amended) The method as set forth in claim 12, ~~[[wherein]]~~ further comprising the steps of:

synchronously outputting an ID flag, for identifying which [[the]] data row in the multiplexed stream is~~[[,]]~~ command data or elementary data stream, ~~[[is outputted synchronously]]~~ with the multiplexed stream; and

~~[[it is judged]]~~ determining based on the ID flag ~~[[which]]~~ whether the data row in the ~~[[supplied]]~~ multiplexed stream is~~[[,]]~~ command data or elementary data stream.

14. (Currently Amended) The method as set forth in claim 12, ~~[[wherein]]~~ further comprising the steps of:

when inserting stuffing data into an output multiplexed stream, ~~[[there is generated]]~~ generating command instruction data having stated therein an instruction for inserting the stuffing data and an amount of the stuffing data;

when the ~~[[read]]~~ command instruction data has stated therein an instruction for inserting the stuffing data, ~~[[there is outputted]]~~ outputting the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for inserting the stuffing data, inserting stuffing data whose amount is stated in the command data ~~[[is inserted to]]~~ into a position of the command data in the multiplexed stream.

15. (Currently Amended) The method as set forth in claim 12, ~~[[wherein]]~~ further comprising the steps of:

when deleting data from an output multiplexed stream, ~~[[there is generated]]~~ generating command instruction data having stated therein a data delete instruction and data amount to be deleted;

when the [[read]] command instruction data has stated therein an instruction for deletion of data, [[there is outputted]] outputting the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for deletion of the data, deleting an amount of data stated in the command data [[is deleted]] from a multiplexed stream next to the command data.

16. (Currently Amended) The method as set forth in claim 12, [[wherein]] further comprising the steps of:

when inserting arbitrary data into an output multiplexed stream, [[there is generated]] generating command instruction data having stated therein an instruction for insertion of the arbitrary data;

when the [[read]] command instruction data has stated therein an instruction for insertion of the arbitrary data, [[there is outputted]] outputting the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for insertion of the arbitrary data, inserting the arbitrary data stated in the command data [[is inserted to]] into a position of the command data in the multiplexed stream.

17. (Currently Amended) The method as set forth in claim 12, [[wherein]] further comprising the steps of:

when sending a timing acknowledgment in an arbitrary timing in an output multiplexed stream, ~~[[there is generated]]~~ generating command instruction data having stated therein an instruction for sending a timing acknowledgment;

when the ~~[[read]]~~ command instruction data has stated therein an instruction for sending the timing acknowledgment, ~~[[there is outputted]]~~ outputting the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for sending the timing acknowledgment, ~~[[there is sent]]~~ sending the timing acknowledgment in a position of the command data in the multiplexed stream.

18. (Currently Amended) A multiplexing method in which a plurality of elementary data streams ~~[[is]]~~ are multiplexed to generate one multiplexed stream, the multiplexing method comprising the steps of:

supplying a plurality of elementary data streams, dividing the elementary data streams into a plurality of data units that are composed of an arbitrary amount of the elementary data stream and storing the ~~[[supplied elementary]]~~ data ~~[[streams]]~~ units into a memory;

generating multiplexing instruction data ~~[[having stated therein]]~~ which describe a storage location~~[[, in the memory,]]~~ of ~~[[a]]~~ each said data unit ~~composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit~~ and storing the ~~[[generated]]~~ multiplexing instruction data into the memory in an order ~~[[of multiplexing corresponding]]~~ that the plurality of data units are to be multiplexed; and

generating ~~[[one]]~~ a multiplexed stream by reading the multiplexing instruction data sequentially ~~[[one by one]]~~ from the memory, ~~reading the data units sequentially from the~~

~~storage locations stated in the read multiplexing instruction data and~~ ~~[[by]]~~ outputting the  
~~[[read]]~~ data ~~[[units]]~~ unit corresponding to the multiplexing instruction data;

in the instruction generating step, ~~[[there being added]]~~ adding the data amount of a data  
unit corresponding to the ~~[[generated]]~~ multiplexing instruction data to a count in a counter  
indicating data occupancy of the memory; and

subtracting the data amount of data unit output from the memory ~~[[being subtracted]]~~  
from the count.

19. (Currently Amended) The method as set forth in claim 18, ~~[[wherein]]~~ further  
comprising the steps of:

dividing the memory ~~[[is divided]]~~ in a plurality of storage areas correspondingly to the  
types of the elementary data streams and storing the supplied elementary data streams ~~[[is  
stored]]~~ into corresponding storage areas;

~~[[the counter holds]]~~ holding a plurality of counts corresponding to the storage areas in  
the memory in the counter;

adding the data amount of a data unit corresponding to the ~~[[generated]]~~ multiplexing  
instruction data ~~[[is added]]~~ to a count corresponding to a storage area in which the data unit is  
stored; and

subtracting the data amount of data unit output from the memory ~~[[is subtracted]]~~ from a  
count corresponding to the storage area in which the data unit is stored.

20. (Currently Amended) A multiplexing method in which a plurality of elementary

data streams [[is]] are multiplexed to generate a plurality of multiplexed streams, the multiplexing method comprising the steps of:

supplying a plurality of elementary data streams, dividing the elementary data streams into a plurality of data units that are composed of an arbitrary amount of the elementary data stream and storing the [[supplied elementary]] data [[streams]] units into a memory;

generating multiplexing instruction data [[having stated therein]] which describe a storage location~~[[, in the memory,]]~~ of [[a]] each said data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the [[generated]] multiplexing instruction data into the memory in an order [[of multiplexing corresponding]] that the plurality of data units are to be multiplexed;

stating, in the multiplexing instruction data, the type of a multiplexed stream resulted from multiplexing data units corresponding to the [[generated]] multiplexing instruction data; and

generating a plurality of multiplexed streams by reading the multiplexing instruction data sequentially [[one by one]] from the memory, ~~reading the data units sequentially from the storage locations stated in the read multiplexing instruction data~~ and [[by]] outputting the [[read]] data [[units]] unit corresponding to the multiplexing instruction data and [[by]] switching the outputting of the [[read]] data unit correspondingly to the multiplexed stream type stated in the [[read]] multiplexing instruction data.